Editorials

You Light Up My Life . . . and Liver
Gastroenterologic Laser Therapy in the 1990s

LASER, AN ACRONYM for *l*ight *a*mplification by *s*timulated *e*mission of *r*adiation, implies an intense, monochromatic, and readily focused light. When used in tissue, the response is dependent on a number of variables. These include not only the wavelength of the laser used but also power settings, pulse duration, repetition rate, and distance from which the laser is applied. Similar tissue changes can be generated at either low power settings applied for longer time frames or with higher power settings and short pulses, effects ultimately contingent on local tissue temperature and the concept of power density.

As reviewed elsewhere in this issue of the JOURNAL in an article by Pritikin and co-workers,[1] lasers have evolved in gastroenterologic application from simple thermal procedures used for cutting (surgical scalpel), coagulation (hemorrhage control, lesion destruction), and photoablation (tissue vaporization) to include photodynamic and photoacoustic capabilities. In this evolutionary process, original laser applications, such as hemostatic control of bleeding peptic ulcers, have largely been supplanted by portable, equally efficacious, and more cost-effective treatments. Thus, with the exception of "watermelon" antritis and colorectal bleeding from radiation telangiectasias, two widespread lesions that are most readily treated by noncontact laser application, the majority of bleeding lesions are better handled with injection therapy or other thermal techniques (heater probe, bipolar cautery).[2,3]

As noted by Pritikin and colleagues, thermal lasers have fared somewhat better in the treatment of gastrointestinal neoplasia, allowing endoluminal continuity of obstructing gastroesophageal or colorectal neoplasms and assisting in the ablation of sessile colonic polyps.[4-8] Even in the treatment of obstructing gastrointestinal cancers, however, the use of lasers is being challenged. For instance, bipolar tumor probes appear, at least in some hands, to be equally efficacious in treating circumferential tumors and can be applied more rapidly than conventional neodymium-yttrium-aluminum-garnet (Nd-YAG) laser therapy.[9] The administration of caustics such as absolute alcohol to effect tissue necrosis and slough has also been reported.[10] Finally, gastroesophageal endoprostheses, admittedly often difficult to place from both patients' and physicians' perspectives, are being reconfigured as coated, expandable wire meshes that appear to offer comparable efficacy to rigid prostheses and may be considerably less noxious to place.[11] All of these developments, as well as parallel advances in thermal laser technology to include contact tips, lateral aiming probes, and air-cooled and thus portable lasers, will continue to alter the technologic balance and the application of that technology for the foreseeable future.

Photodynamic therapy, in turn, undertaken using laser fluorescence after the intravenous administration of a photosensitizer, has yet to fulfill its promise of local tumor necrosis and ablation while leaving normal tissues unscathed.[12] Not only have normal tissues been noted to retain varying amounts of the most commonly used hematoporphyrin photosensitizing agents, but the precise timing of sensitizer injection followed by laser application remains ill defined. This is related, in part, to varying tumor vascularity among patients.

Lasers have been used to fragment stones both urologically and gastroenterologically, which facilitates the retrieval of ureteral and common bile duct stones, respectively. Our group has reported a number of in vitro studies, was the first to use in vivo therapy in choledocholithiasis, and participated in a multicenter trial in patients in whom common bile duct calculi could not be retrieved by conventional methods. Problems remain with this technology, however.[13-15] These problems include the need to ascertain the apposition of the transmitting quartz fiber directly onto the stone to minimize the risk of bile duct damage. Such assurance is possible only by passing a fiber through a miniscope, a tedious and variably expensive procedure. Accordingly, in our institution we reserve dye laser therapy for cases in which alternative treatments—mechanical lithotripsy, extracorporeal shock wave lithotripsy—are unsuccessful in effecting stone fragmentation.

What role do lasers play in the gastroenterologic practice of the 1990s? In contrast to the unrealistic patient expectations fed by Buck Rogers serials and Star Wars news coverage, current and anticipated future lasers are one of many complementary or competing technologies that have variable application in daily practice. As a thermal modality, laser therapy is a valuable tool, particularly when used in conjunction with snare cautery, for broad-based colorectal adenomas. It is one of several competing technologies in the palliation of unresectable or metastatic gastrointestinal malignancy. Lasers play a small part in the treatment of gastrointestinal bleeding and a smaller role still in the fragmentation of biliary stones. Photodynamic therapy has yet to fulfill its potential.

Despite all this, gastroenterologic lasers have evolved from a medical curiosity in the mid-1970s into a limited but definitive therapeutic tool in the 1990s. Costs to purchase, maintain, and apply; efficacy; and side-effect liability must be put into the perspective of other endotherapies to define its ultimate role in our therapeutic armamentarium.

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Eight Years and Counting—What Can Americans Do?

THE SEARCH FOR President Bush's "new world order" and the World Health Organization (WHO) agenda, "Health for All by the Year 2000," are neither theoretical nor rhetorical. In two previous articles, "International Health Beyond the Year 2000"[1] and "International Health,"[2] I reviewed the major challenges and some solutions to global health problems.

If the United States adopts global leadership in efforts to improve the health of people everywhere, 1992 could be a pivotal year.[3] Health for the "global person" could translate into "the new diplomacy"; better health could be the new lingua franca replacing the arms race and the cold war. The total US budget is about $1.5 trillion for fiscal year 1992; the WHO budget for fiscal year 1992 is only $735 million, less than the budget of the US Public Health Service's Centers for Disease Control in Atlanta, Georgia.[3] One suggestion is that US assistance to the WHO can be provided as extrabudgetary funds—a special contribution above and beyond its regular assessment of 25%.[3] President Bush and Congress may reduce the armed services budget by $50 to $100 million during the next five years. This peace-time "fallout" of extra funds could be used to improve health both at home and globally. In its new role as leader in efforts to improve the health of all people, the United States would have to put increased pressure on the European Economic Community, Japan, Taiwan, Singapore, and other economically strong nations to contribute more to the WHO's dwindling resources as AIDS, cholera, floods, drought, and earthquakes continue to wage their own wars on humanity.

Elsewhere in this issue, Alfred Sommer, MD, adroitly outlines global health priorities, including those affecting people in the United States, and emphasizes maximizing quality years of life at a cost society can afford.[4] He identifies the organization and use of health resources as the pivot. Dr Sommer emphasizes the need to maintain close communication with other health professionals who have a common agenda; he rightfully calls for eliminating the divisive barriers hindering close relationships among global health professionals. Moreover, the International Health Medical Educational Consortium (IHMEC) has also mandated reorienting medical school academic agendas to reflect society's demands and realities.[2] Dr Sommer calls for the same efforts by the schools of public health,[4] which for nearly 100 years have given top priority to the health needs of society. IHMEC task forces are currently addressing issues of clinical sites, curriculum, career track and certification, communication, and liaison in a comprehensive effort to ensure that candidates not only have health profession experience but have also "looked after sick people."

Because both dollars and human resources are scarce, we must use plain economic sense and social justice and put increased pressure on our academic health centers to return to their primary mandate of working for public and societal good.[5-7] Academic institutions must claim the "three-legged stool" of cost, access, and quality of care.[6] Those of us in public health and medical schools must care for this "stool" and ensure that it also sprouts a fourth leg of societal priorities with equity. We must become part of the "new world order" instead of reluctant players.

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Meta-analysis Redux—Steroids and Meningitis Revisited

THERE ARE MANY CLINICAL SITUATIONS for which firm therapeutic recommendations cannot be made based on existing data. Sometimes these situations can be identified by the fervor of the discussions surrounding them. Loud, data-free arguments, by necessity based on belief rather than a critical appraisal of relevant literature, frequently occur when new therapies become available or are applied to new uses and before there are enough trials to give clear answers to clinical questions. When more data become available, quieter deliberations are the rule as clinicians try to sort out what to do in the face of sometimes conflicting information from different studies.

Elsewhere in this issue, Geiman and Smith use the techniques of meta-analysis in an attempt to sort through the available data and make a recommendation concerning the use of corticosteroids as adjunctive therapy for the treatment of pediatric patients with bacterial meningitis.[1] Their excellent analysis offers a useful summary of the information available from clinical trials in this area. Their recommendations for use are somewhat firmer than I think the data allow at this time.

In the pediatric studies included in their meta-analysis,[1] early[2] and late[3] neurologic sequelae and moderate or more severe bilateral hearing loss[2] were significantly diminished by dexamethasone therapy in only one trial each. When